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09/628,200	07/28/2000	Junichi Takahashi	IZM-01001	3387

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EXAMINER	
BATTAGLIA, MICHAEL V	

ART UNIT	PAPER NUMBER
2652	10

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/628,200	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Michael V Battaglia	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action, dated April 12, 2004, is in response to Applicant's amendment, filed February 5, 2004. Claims 1-2 and 4-15 are pending. Claim 3 has been cancelled.

Drawings

1. Corrected drawings were received on February 9, 2004. These drawings are acceptable.

Claim Objections

2. Claim 14 is objected to because of the following informality. Claim 14 recites the limitation "said package" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required. The examiner will interpret the claim as if it were dependent on 13 instead of 12 in the prior art rejections below.

Claim Rejections - 35 USC § 102

3. Claims 1, 4, 8, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurata et al (hereafter Kurata).

In regard to claim 1, Kurata discloses an optical head comprising: (a) a light source (Figs. 18 and 19, element 1) for emitting a light beam (Figs. 18-19, element 9) to be irradiated to an optical recording medium (Fig. 19, element 7) as an incident light beam; (b) a hologram element (Figs. 18, 19, and 21, element 2) for receiving a reflected light beam generated by reflection of said incident light beam on said medium to generate at least two diffracted light beams for focusing error detection (Fig. 18, elements 9c and 9d) and at least two diffracted light beams for tracking error detection (Fig. 18, elements 10c, 10d, 11c, and 11d); and (c) an optical detector for detecting

the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Figs. 18-20, element 8); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 20, elements A-D and Col. 12, line 50) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 20, elements E-F and Col. 12, line 42); each of said first and second receiving surfaces being divided into receiving regions (Fig. 20); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Fig. 18); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 18); wherein said hologram element has diffraction grating divided by at least one division line (Fig. 21), said gratings having different grating patterns and at least one of said grating patterns being non-linear and having an offset center with respect to another of said grating patterns (Fig. 21, elements 3a and 3b and Col. 22, lines 53-56), and wherein the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection are generated by said gratings of said element (Fig. 18).

In regard to claim 4, Kurata discloses that the hologram element has a first diffraction grating on a surface of said element (Fig. 21, elements 3a and 3b) and a second diffraction grating on an opposite surface thereof (Fig. 21, element 4a).

In regard to claim 8, Kurata discloses an optical head comprising: (a) a light source (Figs. 18 and 19, element 1) for emitting a light beam (Figs. 18-19, element 9) to be irradiated to an optical recording medium (Fig. 19, element 7) as an incident light beam; (b) a hologram element including gratings divided by at least one division line, said gratings having different patterns (Figs. 18, 19, and 21, element 2), and wherein at least one of said patterns is non-linear and has an offset

center with respect to another of said grating patterns (Fig. 21, elements 3a and 3b and Col. 22, lines 53-56); said element receiving a reflected light beam generated by reflection of said incident light beam on said medium (Figs. 18-19), thereby generating at least two diffracted light beams for focusing error detection (Fig. 18, elements 9c and 9d) and at least two diffracted light beams for tracking error detection by using said gratings (Fig. 18, elements 10c, 10d, 11c, and 11d); (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Figs. 18-20, element 8); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 20, elements A-D and Col. 12, line 50) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 20, elements E-F and Col. 12, line 42); each of said first and second receiving surfaces being divided into receiving regions (Fig. 20); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Fig. 18); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 18).

In regard to claim 12, Kurata discloses an optical head comprising: (a) a light source (Figs. 18 and 19, element 1) for emitting a light beam (Figs. 18-19, element 9) to be irradiated to an optical recording medium (Fig. 19, element 7) as an incident light beam; (b) a hologram element (Figs. 18, 19, and 21, element 2) including, a first diffraction grating (Fig. 21, elements 3a and 3b) on a surface of said element and a second diffraction gating on an opposite surface thereof (Fig. 21, elements 4a), said first and second gratings having different patterns and wherein at least one of said patterns is nonlinear and has an offset center with respect to the other diffraction grating pattern (Fig. 21 and Col. 22, lines 53-56); said element receiving, a reflected light beam generated

by reflection of said incident light bears on said medium (Fig. 19), thereby generating at least two diffracted light beams for focusing error detection (Fig. 18, elements 9c and 9d) and at least the diffracted light beams for tracking error detection (Fig. 18, elements 10c, 10d, 11c, and 11d) by using said first and second gratings; (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Figs. 18-20, element 8); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 20, elements A-D and Col. 12, line 50) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 20, elements E-F and Col. 12, line 42); each of said first and second receiving surfaces being divided into receiving regions (Fig. 20); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Fig. 18); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 18).

4. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Opheij et al (hereafter Opheij) (US 4,924,079).

In regard to claim 1, Opheij discloses an optical head comprising: (a) a light source (Fig. 1, element 7) for emitting a light beam (Figs. 1 and 14, element b) to be irradiated to an optical recording medium (Fig. 1, element 1) as an incident light beam; (b) a hologram element (Figs. 1 and 14, element 9) for receiving a reflected light beam generated by reflection of said incident light beam on said medium to generate at least two diffracted light beams for focusing error detection (Fig. 15, elements $S_{1,1}$ and $S_{1,2}$) and at least two diffracted light beams for tracking error detection (Fig. 15, elements $S_{2,1}$, $S_{2,2}$, $S_{3,1}$, $S_{3,2}$); and (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for

tracking error detection (Figs. 1 and 14, element 11 and Fig. 15); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 15, elements 18-21) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 15, elements 65-68); each of said first and second receiving surfaces being divided into receiving regions (Fig. 15); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Col. 16, lines 5-8); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Col. 16, lines 9-12); wherein said hologram element has diffraction grating divided by at least one division line (Fig. 14, element 25), said gratings having different grating patterns and at least one of said grating patterns being non-linear and having an offset center with respect to another of said grating patterns (Fig. 14, elements 12-13), and wherein the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection are generated by said gratings of said element (Figs. 1 and 14).

In regard to claim 8, Opheij discloses an optical head comprising: (a) a light source (Fig. 1, element 7) for emitting a light beam (Figs. 1 and 14, element b) to be irradiated to an optical recording medium (Fig. 1, element 1) as an incident light beam; (b) a hologram element (Figs. 1 and 14, element 9) including gratings divided by at least one division line (Fig. 14, element 25), said gratings having different patterns, and wherein at least one of said patterns is non-linear and has an offset center with respect to another of said grating patterns (Fig. 14, elements 12-13); said element receiving a reflected light beam generated by reflection of said incident light beam on said medium (Fig. 1), thereby generating at least two diffracted light beams for focusing error detection (Fig. 15, elements $S_{1,1}$ and $S_{1,2}$) and at least two diffracted light beams for tracking error detection (Fig. 15,

elements $S_{2,1}$, $S_{2,2}$, $S_{3,1}$, $S_{3,2}$) by using said gratings; (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Figs. 1 and 14, element 11 and Fig. 15); said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection (Fig. 15, elements 18-21) and a second detection surface for receiving the at least two diffracted light beams for tracking error detection (Fig. 15, elements 65-68); each of said first and second receiving surfaces being divided into receiving regions (Fig. 15); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Fig. 15); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 15).

Claim Rejections - 35 USC § 103

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurata in view of Yamamoto et al (hereafter Yamamoto) (US 6,418,098).

Kurata discloses the optical head of claim 1. Kurata does not disclose that the hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam.

Yamamoto discloses a hologram element with a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam (Fig. 23, element 8). Yamamoto teaches that by selectively exhibiting a diffraction grating function, utilization efficiency of light of the light source is enhanced because only reflected light is diffracted and not incident light traveling towards the optical recording medium (Col. 48, line 63-Col. 49, line 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the hologram element of Kurata have a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam as suggested by Yamamoto, the motivation being to enhance utilization efficiency of the light emitted from the light source.

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opheij in view of Fukakusa et al (hereafter Fukakusa) (US 5,687,155).

Opheij discloses an optical head as claimed in claim 1 that has a package (Fig. 7, element 40) containing the light source and optical detector mounted on a base (Fig. 7, element 42). Opheij does not disclose that the package has a positioning mechanism, wherein said package is mounted on the base using said positioning mechanism (claim 5); that the base has a hole into which the package is inserted (claim 6); and that the optical head further comprises a heat dissipation member (claim 7).

In regard to claim 5, Fukakusa discloses an optical head having at least a light source and an optical detector located in a package having a positioning mechanism; wherein said package is mounted on a base using said positioning mechanism (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the optical member (Figs. 2 and 7, element 10) having the light source (Fig. 2 and 7, element 1) and optical detectors (Fig. 2, elements 2a-2d and 3a-3d and Col. 8, lines 23-24) as the package, the bobbin (Fig. 7, element 60) as the base, and the fixing parts of the optical member and bobbin (Fig. 7, elements 17 and 61 and Col. 8, lines 38-39) as the positioning mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the package of Opheij onto the base of Fukakusa using the positioning mechanism of Fukakusa, the motivation being to fit the package into a fixed position.

In regard to claim 6, Fukakusa discloses that the base has a hole into which said package is inserted; and wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the bobbin fixing part (Fig. 7, element 61) as the engaging part of the inner wall of the hole in the base and the optical member fixing part (Fig. 7, element 17) as the engaging part of the outer wall of the package. In addition, Fukakusa teaches that by fitting the package into the hole in the base, the light source can be sealed off from the atmosphere, which improves reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere (Col. 8, lines 38-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the package of Opheij into a hole in the base; wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; and wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package as suggested by Fukakusa, the motivation being to fit the package into a fixed position while sealing off the light source from the atmosphere, thereby improving reliability by reducing the risk of

shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere.

In regard to claim 7, Fukukusa discloses that the optical head further comprises a heat dissipation member for dissipating heat generated by said light source (Fig. 7, element 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the optical head of Opheij a heat dissipation member for dissipating heat generated by said light source as suggested by Fukakusa, the motivation being to dissipate heat generated by the light source.

7. Claims 9-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurata as applied to claims 8 and 12 above, and further in view of Maeda et al (hereafter Maeda) (US 5,956,302) and in further view of Fukakusa.

In regard to claims 9 and 13, Kurata discloses an optical head as claimed in claims 8 and 12 that has a light source and optical detector (Figs. 18-19, elements 1 and 8). Kurata does not disclose that the light source and optical detector are located in a plastic package or that the package has a positioning mechanism, wherein said package is mounted on a base using said positioning mechanism.

Maeda discloses an optical head that includes a light source and an optical detector located in a plastic package (Fig. 25, element 17). Maeda teaches that by locating the light source and optical detector in the same package, the optical head is small-sized and operates stably over time (Col. 19, lines 51-55) and that by making the package out of plastic, the optical head is lightweight (Col. 24, lines 38-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to locate the light source and optical detector of Kurata in a plastic package as

suggested by Maeda, the motivation being to produce a small-sized, lightweight optical head that operates stably over time.

Fukakusa discloses an optical head having at least a light source and an optical detector located in a package having a positioning mechanism; wherein said package is mounted on a base using said positioning mechanism (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the optical member (Figs. 2 and 7, element 10) having the light source (Fig. 2 and 7, element 1) and optical detectors (Fig. 2, elements 2a-2d and 3a-3d and Col. 8, lines 23-24) as the package, the bobbin (Fig. 7, element 60) as the base, and the fixing parts of the optical member and bobbin (Fig. 7, elements 17 and 61 and Col. 8, lines 38-39) as the positioning mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the plastic package of Kurata in view of Maeda onto the base of Fukakusa using the positioning mechanism of Fukakusa, the motivation being to fit the package into a fixed position.

In regard to claims 10 and 14, Kurata in view of Maeda in further view of Fukakusa as applied to claims 9 and 13 does not disclose that the base has a hole into which the package is inserted.

Fukakusa discloses that the base has a hole into which said package is inserted; and wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the bobbin fixing part (Fig. 7, element 61) as the engaging part of the inner wall of the hole in the base and the optical member

fixing part (Fig. 7, element 17) as the engaging part of the outer wall of the package. In addition, Fukakusa teaches that by fitting the package into the hole in the base, the light source can be sealed off from the atmosphere, which improves reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere (Col. 8, lines 38-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the plastic package of Kurata in view of Maeda and in further view of Fukakusa into a hole in the base; wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; and wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package as suggested by Fukakusa, the motivation being to fit the package into a fixed position while sealing off the light source from the atmosphere, thereby reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere.

In regard to claims 11 and 15, Kurata in view of Maeda in further view of Fukakusa as applied to claims 9 and 13does not disclose that the optical head further comprises a heat dissipation member.

Fukukusa discloses that the optical head further comprises a heat dissipation member for dissipating heat generated by said light source (Fig. 7, element 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the optical head of Kurata in view of Maeda and in further view

of Fukakusa a heat dissipation member for dissipating heat generated by said light source as suggested by Fukakusa, the motivation being to dissipate heat generated by the light source.

Citation of Relevant Prior Art

8. Tezuka et al (US 5,623,462) discloses a hologram with non-linear diffraction grating, a dividing line, and an offset center (Fig. 30 and Col. 24, line 50) and an optical detector that uses two beams for tracking error and two beams for focus error (Fig. 35). Coops et al (US 4,908,506) discloses motivation for using a diffraction grating with a varying grating period and curved grating strips (Col. 3). Opheij et al (US 5,144,131) discloses a diffraction grating having a varying grating period and an optical detector that uses two beams for tracking error and two beams for focus error (Fig. 7 and Col. 7).

Response to Arguments

9. Applicant's arguments, filed February 5, 2004, with respect to claims 1-2 and 4-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Battaglia

W. R. YOUNG
PRIMARY EXAMINER